AMENDMENTS TO THE CLAIMS

Claims 1-11 (Cancelled)

12. (Currently Amended) An optical receiver comprising:

an optical divider that divides an optical input signal into a plurality of paths;

a plurality of optical-to-electrical converters that respectively converts the divided optical input signals into electrical signals;

a plurality of discriminators that respectively outputs discrimination results by discriminating the electrical signals output from the optical-to-electrical converters based on predetermined thresholds, wherein said predetermined thresholds imparted to the plurality of discriminators are determined according to a predetermined logical operation; and

an operational circuit that sets one of the predetermined thresholds to a value, in response to corresponding predetermined logical operation, different from an optimum threshold value that is used when discriminating the optical input signals divided into the plurality of paths with a single discriminator and performs said predetermined logical operation with the set predetermined threshold value and discrimination results output from the discriminators.

13. (Cancelled)

14. (Previously Presented) The optical receiver according to claim 12, wherein the optical divider is an optical polarization divider that divides the optical input signal based on a polarization state of the optical input signal.

15. (Previously Presented) The optical receiver according to claim 14, further comprising:

an optical polarization controller provided at a pre-stage of the optical polarization divider;

a plurality of power monitoring units that respectively monitors optical signal powers on the paths; and

a control circuit that controls the optical polarization controller based on the optical signal powers, wherein

the control circuit controls the optical polarization controller such that output values of the optical signal powers monitored by the optical monitors become substantially equal.

16. (Previously Presented) The optical receiver according to claim 12, wherein the predetermined thresholds of the discriminators are substantially equal.

17. (Previously Presented) The optical receiver according to claim 12, wherein the discriminators are soft decision discriminators,

a plurality of operational circuits is provided, to which a plurality of discrimination results from the soft decision discriminators is respectively input, and

the optical receiver further comprises:

a bit-error-rate monitoring unit that monitors a bit error rate of an output result of each of the operational circuits; and

a path selecting unit that selects an output result having a low bit error rate based on monitoring information of the bit-error-rate monitoring unit.

18. (Previously Presented) The optical receiver according to claim 12, wherein the operational circuit is a logical OR circuit.

19. (Previously Presented) The optical receiver according to claim 12, wherein the operational circuit is a logical AND circuit.

20. (Previously Presented) The optical receiver according to claim 12, further comprising:

a bit-error-rate monitoring unit that monitors a bit error rate of an output result of the operational circuit; and

a discrimination-threshold control circuit that changes levels of the predetermined thresholds of the discriminators based on monitoring information of the bit-error-rate monitoring unit, wherein

the operational circuit switches a function of the logical operation based on the levels of the predetermined thresholds of the discriminators.

21. (Previously Presented) The optical receiver according to claim 20, wherein the function of the logical operation includes a logical OR operation and a logical AND operation.

22. (Currently Amended) An optical communication system comprising:

an optical transmitter that transmits an optical signal; and

an optical receiver that receives the optical signal transmitted from the optical transmitter,

wherein

the optical receiver includes

an optical divider that divides the received optical signal into a plurality of paths;

a plurality of optical-to-electrical converters that respectively converts the divided optical input signals into electrical signals;

a plurality of discriminators that respectively outputs discrimination results by discriminating the electrical signals output from the optical-to-electrical converters based on predetermined thresholds, wherein said predetermined thresholds imparted to the plurality of discriminators are determined according to a predetermined logical operation; and

an operational circuit that sets one of the predetermined thresholds to a value, in response to corresponding predetermined logical operation, different from an optimum threshold value that is used when discriminating the optical input signals divided into the plurality of paths with a single discriminator and performs said predetermined logical operation with the set predetermined threshold value and discrimination results output from the discriminators.

23. (Currently Amended) An optical reception method comprising:

dividing, by an optical divider, an optical input signal into a plurality of paths;

converting the divided optical input signals into respective electrical signals;

outputting discrimination results by discriminating the respective converted electrical signals by utilizing a plurality of discriminators based on predetermined thresholds, wherein said predetermined thresholds imparted to the plurality of discriminators are determined according to a predetermined logical operation; ~~and~~

setting one of the predetermined thresholds to a value, in response to corresponding

predetermined logical operation, different from an optimum threshold value that is used when discriminating the optical input signals divided into the plurality of paths with a single discriminator; and

performing said predetermined logical operation with the set predetermined threshold value and the outputted discrimination results.

24. (Cancelled)

25. (Previously Presented) The optical reception method according to claim 23, wherein

dividing the optical input signal based on a polarization state of the optical input signal.

26. (Previously Presented) The optical reception method according to claim 25, further comprising:

monitoring the respective optical signal powers on the paths; and

controlling the optical polarization based on the optical signal powers such that output values of the monitored optical signal powers become substantially equal.

27. (Previously Presented) The optical reception method according to claim 23, wherein

the predetermined thresholds of the discriminators are substantially equal.

28. (Previously Presented) The optical reception method according to claim 23, wherein

providing a plurality of soft decision discriminators,

providing a plurality of operational circuits, to which a plurality of discrimination results from the soft decision discriminators is respectively input;

monitoring a bit error rate of an output result of each of the operational circuits; and

selecting an output result having a low bit error rate based on monitoring information of said bit-error-rate monitoring step.

29. (Previously Presented) The optical reception method according to claim 23, wherein

the predetermined logical operation is a logical OR operation.

30. (Previously Presented) The optical reception method according to claim 23, wherein

the predetermined logical operation is a logical AND operation.

31. (Previously Presented) The optical reception method according to claim 23, further comprising:

monitoring a bit error rate of an output result performed by said predetermined logical operation; and

changing levels of the predetermined thresholds based on monitoring information of the bit-error-rate; and

switching a function of the logical operation based on the levels of the predetermined thresholds.

32. (Previously Presented) The optical reception method according to claim 31, wherein

the function of the logical operation includes a logical OR operation and a logical AND operation.

33. (Currently Amended) An optical communication method comprising:

transmitting an optical signal; and

receiving the optical signal transmitted, wherein

the receiving includes:

dividing, by an optical divider, an optical input signal into a plurality of paths;

converting the divided optical input signals into respective electrical signals;

outputting discrimination results by discriminating the respective converted electrical signals by utilizing a plurality of discriminators based on predetermined thresholds, wherein said predetermined thresholds imparted to the plurality of discriminators are determined according to a predetermined logical operation; ~~and~~

setting one of the predetermined thresholds to a value, in response to corresponding predetermined logical operation, different from an optimum threshold value that is used when discriminating the optical input signals divided into the plurality of paths with a single discriminator; and

performing said predetermined logical operation with the set predetermined threshold value and the outputted discrimination results.

34. (New) An optical receiver comprising:

an optical divider that divides an optical input signal into a plurality of paths;

a plurality of optical-to-electrical converters that respectively converts the divided optical input signals into electrical signals;

a plurality of discriminators that respectively outputs discrimination results by discriminating the electrical signals output from the optical-to-electrical converters based on predetermined thresholds;

an operational circuit that performs a predetermined logical operation with the discrimination results output from the discriminators;

a bit-error-rate monitoring unit that monitors a bit error rate of an output result of the operational circuit; and

a discrimination-threshold control circuit that changes levels of the predetermined thresholds of the discriminators based on monitoring information of the bit-error-rate monitoring unit, wherein

the operational circuit has a logical OR function and a logical AND function, one of which is selected based on the levels of the predetermined thresholds of the discriminators, and performs the selected logical operation.

35. (New) The optical receiver according to claim 34, wherein

when the level of the predetermined thresholds is set to a value smaller than an optimum threshold that is used when discriminating the optical input signals divided into the paths with a single discriminator, the logical AND function is selected, and

when the level of the predetermined thresholds is set to a value larger than the optimum threshold, the logical OR function is selected.

36. (New) An optical communication system comprising:

an optical transmitter that transmits an optical signal; and

an optical receiver that receives the optical signal transmitted from the optical transmitter, wherein

the optical receiver includes

an optical divider that divides an optical input signal into a plurality of paths;

a plurality of optical-to-electrical converters that respectively converts the divided optical input signals into electrical signals;

a plurality of discriminators that respectively outputs discrimination results by discriminating the electrical signals output from the optical-to-electrical converters based on predetermined thresholds;

an operational circuit that performs a predetermined logical operation with the discrimination results output from the discriminators;

a bit-error-rate monitoring unit that monitors a bit error rate of an output result of the operational circuit; and

a discrimination-threshold control circuit that changes levels of the predetermined thresholds of the discriminators based on monitoring information of the bit-error-rate monitoring unit, wherein

the operational circuit has a logical OR function and a logical AND function, one of which is selected based on the levels of the predetermined thresholds of the discriminators, and performs the selected logical operation.

37. (New) The optical communication system according to claim 36, wherein

when the level of the predetermined thresholds is set to a value smaller than an optimum threshold that is used when discriminating the optical input signals divided into the paths with a single discriminator, the logical AND function is selected, and

when the level of the predetermined thresholds is set to a value larger than the optimum threshold, the logical OR function is selected.